

## Title (en)

P-TYPE PERC DOUBLE-SIDED SOLAR CELL, ASSEMBLY THEREOF, SYSTEM THEREOF AND PREPARATION METHOD THEREFOR

## Title (de)

DOPPELSEITIGE PERC-SOLARZELLE VOM P-TYP, ANORDNUNG DAFÜR, SYSTEM DAFÜR UND HERSTELLUNGSVERFAHREN DAFÜR

## Title (fr)

CELLULE SOLAIRE BIFACIALE DU TYPE PERC DE TYPE P, SON ENSEMBLE, SON SYSTÈME ET SON PROCÉDÉ DE PRÉPARATION

## Publication

**EP 3588585 A4 20210106 (EN)**

## Application

**EP 18760676 A 20180228**

## Priority

- CN 201710122418 A 20170303
- CN 2018077585 W 20180228

## Abstract (en)

[origin: EP3588585A1] A bifacial P-type PERC solar cell consecutively comprises a rear silver electrode (1), rear aluminum grid (2), a rear passivation layer (3), P-type silicon (4), an N-type emitter (5), a front silicon nitride film (6), and a front silver electrode (7); a first laser grooving region (8) is formed in the rear passivation layer by laser grooving; the first laser grooving region is disposed below the rear aluminum grid lines, the rear aluminum grid lines are connected to the P-type silicon via the first laser grooving region, an outer aluminum grid frame (9) is disposed at periphery of the rear aluminum grid lines, and the outer aluminum grid frame is connected with the rear aluminum grid lines and the rear silver electrode; the first laser grooving region includes a plurality of groups of first laser grooving units (81) arranged horizontally, each group of first laser grooving units includes one or more first laser grooving bodies (82) arranged horizontally, and the rear aluminum grid lines are perpendicular to the first laser grooving bodies. The solar cell is simple in structure, low in cost, easy to popularize, and has a high photoelectric conversion efficiency.

## IPC 8 full level

**H01L 31/0224** (2006.01); **H01L 31/068** (2012.01); **H01L 31/18** (2006.01)

## CPC (source: CN EP KR US)

**H01L 21/76** (2013.01 - KR); **H01L 31/022433** (2013.01 - EP US); **H01L 31/022441** (2013.01 - CN KR US); **H01L 31/047** (2014.12 - KR); **H01L 31/068** (2013.01 - EP); **H01L 31/0684** (2013.01 - CN KR US); **H01L 31/1804** (2013.01 - CN EP KR US); **H01L 31/1864** (2013.01 - EP); **H01L 31/1868** (2013.01 - EP KR US); **Y02E 10/50** (2013.01 - KR); **Y02E 10/547** (2013.01 - EP); **Y02P 70/50** (2015.11 - EP)

## Citation (search report)

- [A] DE 202015004065 U1 20150730 - SOLARWORLD INNOVATIONS GMBH [DE]
- [A] DE 102015104236 A1 20160922 - FRAUNHOFER GES FORSCHUNG [DE]
- [A] DE 102014105358 A1 20151015 - SOLARWORLD INNOVATIONS GMBH [DE]
- [A] CN 106252445 A 20161221 - SUZHOU CSI SOLAR POWER TECH CO
- [A] CN 106449834 A 20170222 - SUZHOU CSI SOLAR POWER TECH CO
- See references of WO 2018157821A1

## Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

## DOCDB simple family (publication)

**EP 3588585 A1 20200101**; **EP 3588585 A4 20210106**; **EP 3588585 B1 20230222**; CN 107425080 A 20171201; CN 107425080 B 20191115; JP 2020509601 A 20200326; JP 7023975 B2 20220222; KR 102323459 B1 20211108; KR 20200005535 A 20200115; US 2020127149 A1 20200423; WO 2018157821 A1 20180907

## DOCDB simple family (application)

**EP 18760676 A 20180228**; CN 201710122418 A 20170303; CN 2018077585 W 20180228; JP 2019547982 A 20180228; KR 20197029113 A 20180228; US 201816490874 A 20180228